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Digital Transformation In Hrm: Exploring The Future Of Human Resource Management In Public Enterprises

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ABSTRACT

The digital era has significantly transformed the landscape of human resource management (HRM), especially within public enterprises. This review explores the evolving role of HRM in adapting to technological advancements, automation, and data-driven decision-making processes. As public enterprises face unique challenges—such as regulatory constraints, budget limitations, and increased scrutiny on transparency—HR departments are leveraging digital tools to enhance workforce management, recruitment, training, and performance evaluation. The integration of artificial intelligence, machine learning, and analytics into HR functions offers public organizations opportunities to improve efficiency, employee engagement, and service delivery. This study used document analysis technique and analysed previous research papers from Web of Science, Scopus, Taylor and Francis and Google scholar on human resource digitisation in public enterprises. This guided the study to consciously select only papers on Human Resource Management (HRM) and digitisation. The study revealed that artificial intelligence training; managerial autonomy and external coordination are crucial aspects for state-owned enterprises in the digital era.

Keywords:

Digitalization, Automation, Public Enterprises, Artificial Intelligence, Machine Learning.

INTRODUCTION

The digital era is significantly reshaping human resource management (HRM), especially within public enterprises, which face unique challenges and opportunities as they adopt advanced technologies to improve their HR functions. Digital transformation in HR has moved beyond simple automation of tasks, becoming integral to organizational strategy and directly impacting workforce satisfaction, productivity, and operational efficiency. This shift has introduced new expectations for HR leaders, who are now tasked with designing innovative solutions that align HR objectives with business priorities, including improving digital maturity and enabling seamless hybrid and remote work arrangements (AIHR, 2023; Deloitte, 2023).

In public enterprises, the emphasis on digital transformation is driven by the need to enhance flexibility, employee engagement, and service delivery for diverse populations. For instance, the Canadian public service has adopted a post-pandemic planning framework that prioritizes equity, flexibility, and coherence in HR practices across the sector. This new framework aims to bridge potential biases between on-site and remote employees and promote diversity in thought and policy. It also requires continuous adaptation, allowing for more localized decision-making and the incorporation of employee insights into HR strategies (Public Sector Network, 2023).

The adoption of artificial intelligence (AI), machine learning, and data analytics within HR functions further exemplifies this shift, offering new tools for public enterprises to analyze employee performance, support talent acquisition, and personalize training and development programs. These technologies enable HR to respond proactively to employee needs and contribute to higher productivity, agility, and job satisfaction. However, the adoption of digital HR solutions is not without challenges; public enterprises must balance the need for advanced technologies with concerns over privacy, inclusivity, and equitable access to opportunities (Deloitte, 2023; AIHR,

2023).

Ultimately, the future of HRM in public enterprises will likely focus on designing people-centric strategies that leverage technology for enhanced employee experiences and productivity. This approach requires a shift from traditional hierarchical models to one based on experimentation and human-centered design. Such transformations aim to empower employees to work more effectively across digital platforms while maintaining the public sector's mission to serve diverse communities effectively (Public Sector Network, 2023).

The rapid advancements in digital technologies have ushered in a new era for industries worldwide, including the public sector. As organizations seek to stay competitive and responsive to evolving demands, digital transformation has become an essential strategic focus. For public enterprises, digital transformation is especially crucial as these organizations face mounting pressure to enhance transparency, accountability, and efficiency in their service delivery. In this context, human resource management (HRM) plays a critical role in shaping an organization's adaptability to change, determining its ability to leverage new tools and technologies, and managing a workforce capable of thriving in a digital-first environment.

Human resource management in the public sector has traditionally focused on areas like recruitment, payroll, compliance, and benefits administration. However, the advent of advanced digital tools—such as artificial intelligence (AI), machine learning, and data analytics—has significantly expanded the potential of HRM functions. Today, HR departments in public enterprises are exploring ways to automate repetitive tasks, enhance recruitment processes, foster remote work, and promote a culture of continuous learning. In particular, technologies such as AI-driven recruitment systems, performance-tracking analytics, and employee self-service portals are rapidly becoming part of the HR toolkit, offering public enterprises the ability to streamline operations, reduce costs, and enhance employee engagement.

Yet, the integration of digital technology into HRM within the public sector also poses unique challenges. Public enterprises operate under strict regulatory frameworks, heightened public scrutiny, and limited budgets, which can make the adoption of new technologies more complex than in private-sector organizations. Moreover, public enterprises often have diverse workforces, including a significant proportion of employees nearing retirement, making it challenging to foster digital literacy across the board. The need to balance the advantages of digitization with data privacy, equity, and inclusiveness further complicates HRM’s transition into the digital era. Therefore, understanding the potential benefits and limitations of digital HRM within public enterprises is essential for developing policies and practices that align with the public sector’s ethical and regulatory standards.

One significant trend in digital HRM for public enterprises is the use of data analytics to inform strategic decision-making. By leveraging workforce analytics, HR departments can gain insights into employee performance, training needs, turnover patterns, and engagement levels. These data-driven insights can empower public enterprises to make evidence-based decisions, optimize talent allocation, and improve overall organizational performance. For example, predictive analytics can help identify patterns of attrition and absenteeism, enabling HR managers to address underlying issues proactively. However, the implementation of such analytics requires careful consideration of data privacy and compliance with relevant regulations, especially in the public sector where data usage is subject to stricter controls.

Additionally, automation is transforming HR functions by enabling public enterprises to streamline routine tasks, freeing up HR staff to focus on more strategic responsibilities. Technologies like robotic process automation (RPA) can handle repetitive tasks such as payroll processing, benefits enrollment, and employee onboarding. This shift not only improves efficiency but also reduces the likelihood of human error, which is particularly valuable in the public sector where compliance with complex regulations is essential. However, as automation reduces the need for certain manual tasks, it raises questions about the future of HR roles traditionally focused on administrative duties. This change underscores the need for HR professionals to develop new competencies, such as digital literacy, data analysis, and strategic thinking, to remain relevant in an evolving workplace.

Furthermore, the rise of remote work, catalyzed by the COVID-19 pandemic, has accelerated the need for digital HRM solutions that support a geographically dispersed workforce. Public enterprises, often known for centralized work structures, have had to adapt quickly to remote and hybrid work models. Digital tools such as collaboration platforms, virtual onboarding systems, and online performance management software have become essential for maintaining productivity and engagement in remote settings. The shift to remote work has also highlighted the importance of fostering a strong organizational culture in a digital environment. Public sector HR departments are increasingly focusing on initiatives that promote virtual team cohesion, digital wellness, and employee well-being,

recognizing that these factors are critical for sustaining a motivated and resilient workforce.

While the benefits of digital HRM are evident, the public sector's adoption of digital tools must align with ethical and regulatory considerations. Issues related to data privacy, cybersecurity, and algorithmic bias require careful management, especially as public enterprises are accountable to the public and operate within a strict regulatory framework. For instance, the use of AI in recruitment could unintentionally introduce biases if the algorithms are not carefully monitored and calibrated. Additionally, cybersecurity threats pose a risk to sensitive employee data, underscoring the need for robust data protection measures. Therefore, public sector HRM must not only embrace digital innovation but also ensure that such innovations align with public values and legal requirements.

This paper examines the future of HRM within public enterprises, focusing on how digital transformation is reshaping HR functions and the implications for public organizations. It explores the potential of digital tools to enhance HR processes, the challenges posed by digital adoption in a public sector context, and the strategies that HR leaders can employ to navigate these changes. By reviewing current literature and case studies, this paper aims to provide insights into the opportunities and constraints of digital HRM in public enterprises. Ultimately, it underscores the need for a balanced approach that integrates technological advancements with the ethical and operational standards unique to the public sector. As public enterprises continue to embrace digital transformation, HRM will play a central role in shaping a workforce that is agile, innovative, and aligned with the evolving mission of public service in the digital age.

1.1 LITERATURE REVIEW AND THEORETICAL BACKGROUND

A literature review on the future of human resource management (HRM) in the digital era reveals that digital transformation in HR, especially in public enterprises, is reshaping practices through automation, AI integration, and electronic HR management systems (e-HRM). These tools have enabled greater efficiency and data-driven decision-making, offering public enterprises the chance to streamline HR tasks, improve employee engagement, and make proactive adjustments to meet workforce needs. However, digital transformation also introduces challenges, particularly regarding data privacy, security, and the management of employee-AI interactions.

Artificial intelligence (AI) and machine learning (ML) are increasingly incorporated into e-HRM to optimize recruitment, performance evaluation, and workforce planning. By leveraging predictive analytics, organizations can now anticipate talent shortages, address engagement issues, and improve retention rates more effectively. The alignment of AI and HR also enables personalization of learning and development, tailoring opportunities to individual career trajectories and fostering a culture of continuous growth (Frontiers, 2023).

Public enterprises, however, face unique challenges compared to private sector counterparts. The bureaucratic structure and compliance requirements within public organizations often hinder rapid technological integration. Issues such as resistance to change, the high costs of technology adoption, and the need for specialized skills in HR teams remain significant obstacles. Additionally, the use of digital tools raises concerns about privacy and ethical considerations, especially in government sectors where public trust and transparency are critical. Consequently, successful digital transformation in public HR requires robust frameworks to address these ethical and legal challenges while promoting a balanced, human-centric approach (World Journal of Advanced Research and Reviews, 2023).

From a theoretical standpoint, the resource-based view (RBV) theory supports the argument that strategic digital transformation can provide HR departments with a competitive advantage by enhancing their operational capabilities and increasing employee value. The integration of digital technologies aligns with RBV by enabling HR functions to become more efficient and agile, which is essential in today's fast-paced, data-driven landscape. Additionally, human-centric AI, which emphasizes empathy and human values, is gaining traction within HR as organizations seek to ensure that technology serves to enhance—rather than replace—human interactions and well-being (Frontiers, 2023; WJARR, 2023).

1.2 Vial (2019) regards technological change as a process of implementing Information Communication Technology that activates changes and developments in organisations. Verhoef et al. (2021) provide that, when an entity drives digital change process, it implements innovations to alter its business operations. SOEs face many challenges due to their essential unique characteristics (Shao, 2011). Specifically, when compared to private organisations, SOEs usually bear a heavier policy responsibility. For example, SOEs bear an extreme pressure from the institutional environment (Huang and Yu, 2006). Particularly, regulatory procedures and agreements viz property rights, ownership system and of appointment of leaders in an organisation greatly influences the way public enterprises develop (Huang et al., 2018). SOEs also have extreme social duties and commitments, causing more normative pressures than other organisations. SOEs should not only fulfill political obligations but also social tasks such as public assistance, sustainability of the environment, alleviation of poverty (Chen et al., 2022). Furthermore, path dependence for change and organisational inertia are the main characteristics of state-owned enterprises. The inherent principle of serving the State and consistent performance causes further mental restraints and behavioral inertia in state-owned enterprises compared to other entities, which greatly affects their development and innovation (Huang et al., 2018; Xu et al., 2017; Yang et al., 2012).
Unified Theory of Acceptance and Use of Technology (UTAUT) provides that technological use is mainly influenced by the behavioural intention. The perceived chance of embracing technological innovation is based on four key constructs such as effort expectancy, performance expectancy, facilitating conditions, and social influence. The impact of predictors is moderated by sex, knowledge or experience, age, and intention (Venkatesh et al., 2003). Performance expectancy is the degree to which people have the belief that the use of the system assists in the performance of the job (Venkatesh et al., 2003). In the context of HRM, there is need to examine the extent to which technology benefit organisations. This theory is best in predicting use intention and is vital in voluntary and compulsory settings (Venkatesh, Thong, and Xu, 2016). Effort expectancy is the degree of ease that is related to system usage (Venkatesh et al., 2003). In maintaining a pool of customers, the system needs to be user-friendly and less complicated. Additionally, the social influence effect is substantial when technological use is mandated (Venkatesh et al., 2003). In the mandatory context, technological use might happen for compliance rather than individual preferences (Venkatesh and Davis, 2000). Facilitating conditions is referred to as the degree to which people believe that an entity and its technical infrastructure is available to support the use of the system (Venkatesh et al., 2003). Furthermore, there is a positive effect of use intention on facilitating conditions, but the effect will not be significant after initial use.
In sum, digital transformation in public enterprise HRM holds significant promise but must be approached with careful planning and consideration of unique sector-specific challenges.

1.3 PROBLEM STATEMENT

1.4 Despite the call for organisations to digitalise in this 4th industrial revolution, there has been a slow digital transformation in state-owned enterprises. Public organisations are led by the policy makers, and this should create organisational competitiveness. Technological changes enable an organisation to innovate its less competitive operations and adjust to the ever-changing needs in the marketplace (Liu et al 2024). This study therefore addresses the implications of digitalisation in HRM functions of state-owned enterprises and provide insights on HRM activities can be adapted to the digital era in public enterprises.

1.5 METHODOLOGY

Secondary data analysis was used in this study. In applying this method, a library search and examination of previous studies on human resource management was done by only selecting literature on HRM and digitalisation. Document analysis is defined as the usage of both printed and electronic version of materials for reviewing, assessment and evaluating to arrive at a conclusion which gives positive meaning (Bowen, 2009). Document analysis appears to be an easy research technique yet a brilliant foundation from drawing appropriate literature from a given pool of wider coverage areas (Amoah, Metzker, Khan and Jibril 2021). This method is less expensive when compared to other methods (Neuman, 2011). A critical document analysis systematically examined the connection between human resource management and digitalisation. The library search method makes use of online articles and offline materials. These are textbooks and newspaper articles. Databases for human resource management such as Taylor and Francis, Scopus and Emerald were used to get research articles (with the keywords: HRM and technology).

1.6 DISCUSSION AND FINDINGS

1.6. Performance expectancy

State owned enterprises are shielded from competition as they seem to enjoy protection due to monopoly, domination, and other entry barriers. This is one of the reasons for few or less innovations in SOEs when compared to private firms. Competition leads to the rise of innovation in the business environment. (Castelnovo, 2022). Furthermore, Belloc (2014) stated that inefficiencies of public entities in the production of technological innovation is caused by other conditions related to political interference, institutions, culture, and legislation. Hence, proposals to increase commitment of managers to future development plans and minimisation of political intervention must be more effective on long-run technological improvement than firm privatisation. According to Landoni (2020), managerial autonomy and external coordination there are exact aspects that allow public enterprises to innovate efficiently. Managerial autonomy means liberation from political intervention, whereas external coordination refers to alignment of firm's strategies with the government innovation guidelines and mutual reinforcement (Castelnovo, 2022). Managerial autonomy assures advantages concerning other public sector innovators such as research institutions. External coordination offers advantages over private sector organisations, warranting a privileged association with the State.

1.6. Effort expectancy

The procedure of organising job analysis for a single position is tiresome and time consuming. Constructing and revising job descriptions and job specifications for a big organisation with many positions can be difficult to manage. Therefore, the use of artificial intelligence for job analysis has a great advantage for the organisation due to its ability to automate and streamline collection of data and analysis procedures. AI produces comprehensive and precise job profiles that can focus on the key skills, knowledge, and competences required for every single role. This has an advantage of saving time and minimising human efforts (Stone et al, 2024).

Recruiting is a very notable function in organisations because firms are now competing for labour based on the employee skills, knowledge competencies. Thus, attracting and retaining talented workforce is essential to the success of an organisation. Big companies use AI when recruiting candidates. For example, AI-enabled recruiting is used by companies such as Amazon, Unilever, Siemens, and Delta, to mention just a few (Stone, 2024). Websites, newspapers, and various forms of media are typically used by many firms to recruit applicants. However, Artificial Intelligence makes a recruitment process much easier by examining interior and exterior databases. Social media platforms such as Facebook, WhatsApp and LinkedIn are used to find suitable candidates, particularly inactive job seekers, and persuade them to apply for advertised jobs. This process increases the organisation's ability to assertively look for the most suitable people rather than passively wait for individuals to apply for the advertised posts (Stone, 2024).

Training and Development is an essential function of Human Resource Management which assists to improve employee skills and abilities in an organisation. Furthermore, training fosters employee engagement, productivity, and retention which provides organisational competitiveness. Other large firms have started the use of Artificial Intelligence as a way of increasing the effectiveness of internal training and development processes. For instance, AI enabled training can personalise training and meet the specific needs of the workforce instead of providing courses that are standardised (Stone, 2024). Additionally, AI-enabled training makes use of online tutors to help trainees and improve their ability to learn the training content. Conclusively, AI can be used to produce realistic simulations that help the workforce to learn job skills that are complex. This increases employee effectiveness in various jobs such as medical doctor, pilot, call centre agent, etc (Stone, 2024).

Social influence

Despite potential restraints associated with the use of technology to handle human resources processes, technology will continuously transform and innovate HRM in the future. Several scholars provided that the use of modern interactive technologies which include social media, computer-generated simulations, and chat rooms should play a role in minimising some limitations linked with the present systems (Dineen and Allen, 2013; Stone et al., 2015; Sullivan, 2014). By using virtual reality, candidates must be provided with prospects of attending online job fairs, and this also give managers the ability to mentor their juniors and offer them opportunities to take part in virtual/online training simulations. This should enhance the degree to which digital-based human resource activities are flexible, engaging and minimise the interactive distance between labor force and superiors (Stone and Deadrick, 2015).

Research has indicated that technology often reduces the administrative load in HRM, enhances efficiency, and

permits human resource professionals to influence the organisational strategic direction (Dlamini, Zogli, Muzanenhamo 2021; Stone and Dulebohn, 2013). Modern interactive technologies enable companies to attract and retain critical skills (Stone et al., 2015). This is due to the technological ability to allow supervisors and human resource practitioners to engage in more frequent communication with the workforce in an organisation. Consequently, mangers will be able to recognise and achieve the needs of critical staff which in turn provides employee commitment and organisational performance. It also enables an organisation to create effective HRM choices based on unbiased data (Dulebohn and Johnson, 2013).

1.7 Facilitating conditions

Innovation activities in state owned enterprises rely on three main opinions. First, States act as long-standing investors since they don't push for quick revenues and profit-making, while private enterprises naturally invest to make profit in a short period of time. Second, States can take risks by having investments in uncertain innovations whose proceeds may demotivate private firms to bear the costs of innovation. Third, governments have softer budget constraints when compared to private enterprises, hence there is little influence from business cycles in their Research and Development investments (Castelnovo, 2022). State-owned enterprises can be used as instruments for innovation policy (Tonurist and Karo 2016). One major advantage of public enterprises as tools of innovation is that they can overcome various conservative encounters of innovation guiding principle such as implementation, and investment of innovation projects (Castelnovo, 2022).

KEY FINDINGS

Increased Efficiency and Automation:

Digital tools allow HR processes to become faster and more efficient. Many HR tasks that were traditionally manual, like recruitment and onboarding, are now streamlined through digital platforms, reducing paperwork and improving response times. For instance, automated applicant tracking systems help HR professionals quickly filter candidates, while cloud-based HR platforms centralize employee data for easy access.

Enhanced Decision-Making through Data Analytics:

HR analytics is a powerful trend where data from various HR functions is analyzed to improve decision-making. This trend allows HR managers to track employee performance, identify potential skill gaps, and even predict turnover rates. Using these insights, public enterprises can make more strategic decisions about workforce planning and talent management.

Challenges of Data Security and Privacy:

Despite its benefits, digital transformation in HRM also presents significant challenges, particularly concerning data security and privacy. With the increased collection of employee data, HR departments must adhere to strict privacy regulations to protect sensitive information, an area requiring robust cybersecurity measures and employee data protection protocols.

Shift in Skills and Competencies:

The digital era demands that HR professionals acquire new skills, such as digital literacy and data analytics. This change means public enterprises must invest in reskilling and upskilling their HR workforce to keep pace with technological advancements.

Adapting Organizational Culture: As digital tools reshape HR practices, public enterprises face cultural shifts toward more flexible and technology-driven environments. Digital transformation encourages collaboration, often through enhanced communication tools and digital workspaces. However, some employees may resist these changes, necessitating strategies for smoother transitions and greater buy-in from all staff levels.

1.8 CONCLUSION AND RECOMMENDATIONS

The study has revealed the importance of technology in human resource management which creates smooth operations in SOEs. The four constructs of UTAUT model have shown how SOEs benefit from new technologies. The study has also shown that artificial intelligence training, managerial autonomy and external coordination are important factors to address in SOEs for future development of HRM in the digital era. It is vital for SOEs to embrace technology and be able to adjust operations which attracts talent and improve organisational competitiveness. Policy makers should formulate and drive the implementation of technological transformation in SOEs.

LIMITATION OF THE STUDY

The limitation is that the paper is solely based on literature; hence an empirical study may be needed. Future studies can be done empirically using qualitative or quantitative methods to explore the role of HRM digitisation

in public enterprises.

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